of the flora and the environmental factors operative in the area. The fluctuations in climatic conditions from one year to another add to the difficulty of securing complete collections within a reasonable period of time. But with all of the discouraging features connected with a careful survey of such a large area, Baja California, with its diverse, problematical flora, holds a strong attraction for the field botanist.

This trip, extending from April 2 to June 6, 1931, as well as three previous shorter trips into Lower California, was made possible by the interest and generosity of Mr. H. C. Dudley, of Duluth, Minnesota, and Mr. E. G. Dudley, of Exeter, California. Their aid is greatly appreciated and I wish to acknowledge my sincere thanks for their continued interest. Thanks are also due and gladly given to the Mexican Consul General at San Francisco, the Mexican Consul at San Diego, and numerous Customs Officers at various towns in Baja California, for the many courtesies extended us and for numerous aids in securing necessary permits. Señor Arturo Canseco, a prominent merchant in San Jose del Cabo, earned our lasting gratitude during the time we stopped there.

Dudley Herbarium, Stanford University.

RAINFALL PREDICTIONS FOR CALIFORNIA, SEASON OF 1931-1932

In October, 1931, an announcement was made by Dr. Geo. F. McEwen and Dr. A. F. Garton of the Scripps Institution of Oceanography that California would probably have a drier winter than normal this year. Their prediction was based on a study of records of Pacific Ocean temperatures which indicate that offshore water temperatures higher than average are followed by winters drier than average and conversely lower temperatures indicate wet winters. The offshore temperatures for 1931 have been markedly above average. This fact, in connection with the low point position of the 1931-32 season in the Bruckner precipitation cycle of 22 to 32 years, led to the belief that the season would be "dry."

Fortunately for California industrially and in other ways, precipitation records for the season on March 15, 1932, were above normal at all six stations south of San Francisco Bay whose records are commonly circulated by the United States Weather Bureau and much above the lows of recent years at the four stations in California north of San Francisco Bay as published daily in the press by the Weather Bureau.

On account of the great biological significance which attaches to precipitation records for California a study by H. B. Lynch, Consulting Engineer of the Metropolitan Water District, Los Angeles, published August, 1931, has interest for botanists. His paper, which is based on mission and other records as to weather, crops, droughts, floods, ice and snow, is entitled "Rainfall and stream run-off in Southern California since 1769". From the discussion in this paper one seems driven to the inference that we have not yet, at this time, reached the low point in our present series of drought years, which form only

a part of a long-period deficiency cycle. The summary of his conclusions are as follows: "1. There has been no material change in the mean climatic conditions of Southern California in the past 162 years. 2. There have been earlier fluctuations from average rainfall conditions, however, both excesses and deficiencies, of greater magnitude than any which have occurred in the past forty years. 3. The twenty-eight year period of rainfall deficiency which ended in 1810 was about as severe as has been the present one to date, and much more protracted. 4. The period of rainfall surplus from 1810 to 1821 was more intense than anything in the past forty years. It seems to have been about as intense as was that between 1883 and 1893. 5. The period of rainfall deficiency which lasted from about 1822 to 1832 was more severe than has been any occurring since. 6. The period of rainfall deficiency which commenced in 1842 and lasted until 1883 was much longer than any other of which we have record. It was not so acute, however, as some others, both earlier and later. It was broken by a period of normal rainfall, but was without any period of excess rainfall to balance the deficiency. 7. In comparison with several periods of rainfall shortage which have occurred in past years, the present rainfall deficiency to date cannot be considered a major shortage. 8. For all practical purposes the useful water yield of the areas under consideration closely approximates the run-off from the principal streams of these areas, except in times of heavy floods. 9. The run-off from Southern California streams has in general shown fluctuations from the normal similar in character to those of the rainfall, but larger in relative percentage. 10. By reason of these fluctuations, the useful water yield has at various times been reduced from the average by considerably more than one-half for a period of ten years, and by thirty per cent for a period of twenty-eight years."—W. L. Jepson.

NOTES AND NEWS

Mr. H. L. Mason delivered a lecture at the California Academy of Sciences on the evening of November 4, 1931, at San Francisco on "The history and migration of the Monterey pine forests."

The annual year book of the Santa Barbara Museum of Natural History for 1931, recently issued, contains a report of the Blakesley Botanic Garden and other general data, as well as several good illustrations.

Dr. Geo. J. Peirce of Stanford University was elected President of the Botanical Society of America at the December, 1931, meeting in New Orleans.

"Vegetative changes and grazing use on Douglas Fir cut-over land" by Douglas C. Ingram, is a United States Forest Service publication. This paper is of interest to botanists. It discusses especially the changes in species and groups under the influence of grazing (Jour. Agr. Res. vol. 43, no. 5, 1931).